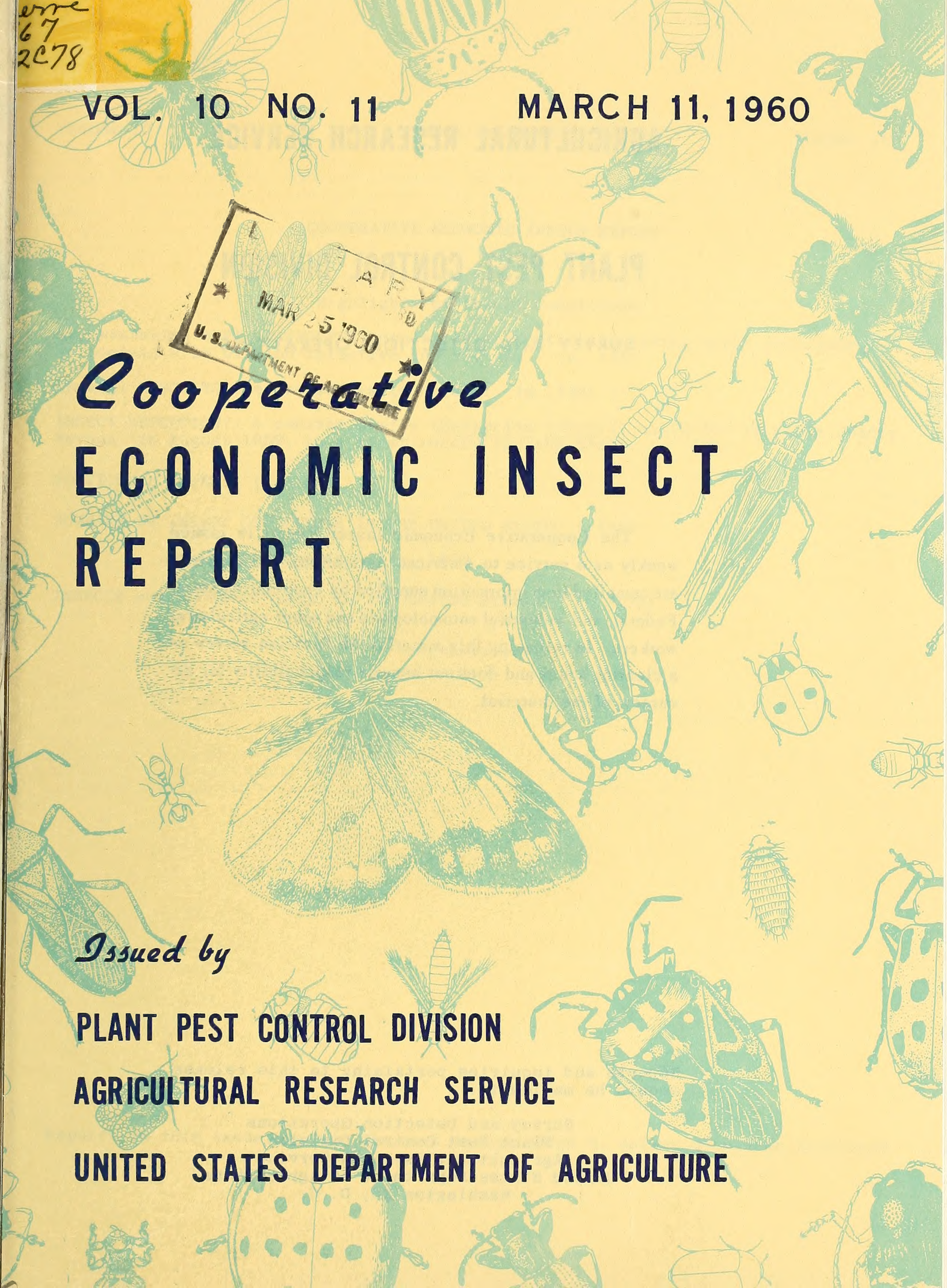
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

67
2C78

VOL. 10 NO. 11 MARCH 11, 1960

LIBRARY
MAR 25 1960
U.S. DEPARTMENT OF AGRICULTURE



# *Cooperative* ECONOMIC INSECT REPORT

*Issued by*

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

# AGRICULTURAL RESEARCH SERVICE

# PLANT PEST CONTROL DIVISION

## SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 10 March 11, 1960 Number 11

# COOPERATIVE ECONOMIC INSECT REPORT

## Highlights of Insect Conditions

Overwintering BEET LEAFHOPPER population in southern breeding areas calculated to contain 0.18 billion infective individuals. (p. 155).

Several MOSQUITO species active in Nevada. (p. 158).

INSECT DETECTION: A conifer sawfly (Zadiprion rohweri) collected in Clark County, Nevada, in August 1959, is a first record for the State. (p. 158).

ADDITIONAL NOTES. (p. 158).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1959

Truck Crop Insects - (p. 160).

INSECTS not known to occur in the United States. (p. 179).

**************

Reports in this issue are for the week ending March 4, unless otherwise indicated.

## WEATHER OF THE WEEK ENDING MARCH 7

Severely cold weather continued to be the dominant feature over most of the Nation this week. An extensive mass of arctic air, centered over the Great Plains throughout the week, spread into all portions of the country, bringing the coldest week of the winter to most areas with the weekly average temperature generally more than 15° below normal from the Southeastern States to the Pacific Northwest. Record low minimum temperatures for so late in the season were reported at numerous stations from the Rocky Mountain and Plateau States to the Great Plains, the Mississippi and Ohio Valleys and the Southeastern and Middle Atlantic States. Temperatures below zero were general over the Great Plains from the Oklahoma Panhandle northward and -20° or colder were reported from northwestern Kansas to Wisconsin and Montana.

The major storm of the week first developed in the northwestern Gulf of Mexico on Tuesday, moved into the central Gulf States on Wednesday and weakened in the Ohio Valley as a new center formed off the Carolinas on Thursday, intensified rapidly, and moved northeastward off the coast of New England by early Friday. Rain, freezing rain, sleet and snow spread from the southern Great Plains to encompass most of the eastern half of the Nation as these weather systems developed. Severe glazing from Texas and Arkansas to Alabama, Georgia, South Carolina and Tennessee left large areas covered with 1 inch or more of ice, caused extensive damage to communication lines, timber and other property. Farther north, heavy snows, driven by persistent strong winds which reached hurricane force in gusts in coastal New England, paralyzed normal activities from the southern Appalachians to New England. Total falls ranged up to 20 to 30 inches in southeastern New England and Long Island, 4 to 22 inches in New Jersey, New York and Pennsylvania, 2 to 5 inches in Tennessee, eastern Virginia, North Carolina and Maryland and 10 to over 20 inches in the Appalachians.

Along the Pacific Coast, unusually cold weather covered Oregon and Washington and unseasonably heavy snow was reported in sections of these States, while in California temperatures were near normal and moderate to heavy precipitation occurred in some northern and southern sections.

Much-below-normal temperatures early in the week in the Plateau States, including some coldest readings for so late in the season in Utah, moderated rapidly, with highest readings for so early in the spring recorded in areas of Arizona over the weekend. (Weather supplied by U. S. Weather Bureau).

## CEREAL AND FORAGE INSECTS

GREENBUG (*Toxoptera graminum*) - OKLAHOMA - Although persistent inclement weather limited the number of reports, sampled populations of this species were smaller than during the period February 21-27. In the extreme south, counts in wheat ranged 0.02-6 per linear foot in Love and Tillman Counties (Hatfield, Vinson) and a survey of 8 fields of wheat in the Kingfisher-Logan-Garfield County area gave counts of 0-15 per linear foot on February 22 (Owens).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - None found in most fields of wheat sampled in Tillman and Love Counties; a single field in Love County yielded 1.5 aphids per linear foot. (Vinson, Hatfield).

WINTER GRAIN MITE (*Penthaleus major*) - CALIFORNIA - Occurring as a general light infestation on oats, primarily Palestine oats, in the Collinsville area of Solano County. (Dr. W.H. Lange).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Populations showed some decrease in the southern parts of the State, the only areas in which sampling is currently possible due to snow. Counts in a single field in Love County averaged 1.5 per square foot of crown area. (Vinson). Counts during the week of February 22 in the Kingfisher-Garfield County area ranged 0-30 per square foot of crown area (Owens, Hatfield),and for the same period numbers found in the Stillwater area of Payne County averaged 15 per square foot (James). NEW MEXICO - Light to nonexistent in Dona Ana County. Moderate to heavy infestations present in several alfalfa fields in Eddy and Chaves Counties. (N. M. Coop. Rpt.).

PEA APHID (*Macrosiphum pisi*) - OKLAHOMA - Populations in Love County remained low, 0.02 per square foot of crown area. (Vinson).

## FRUIT INSECTS

WOOLLY APPLE APHID (*Eriosoma lanigerum*) - DELAWARE - Found on roots of 15-year-old apple trees at Lewes, Sussex County. Six trees (dead) pulled up and the entire plantation of approximately 15 acres shows signs of heavy infestations (poor growth). Exact causal factors complicated by pronounced symptoms of crown gall. (Kelsey, Heuberger, Feb. 18).

A SPIDER MITE (*Tetranychus* sp.) - NEW MEXICO - Light infestations of overwintering forms found under bark on apple trees in Hondo Valley. (N. M. Coop. Rpt.).

## TRUCK CROP INSECTS

BEAN WEEVIL (*Acanthoscelides obtectus*) - CALIFORNIA - Adults heavy in seed beans in Salinas, Monterey County. (Cal. Coop. Rpt.).

BEET LEAFHOPPER (*Circulifer tenellus*) - The overwintering population in the southern breeding areas (reported in CEIR 10(10):132-133) was calculated to contain 0.18 billion infective beet leafhoppers. This compares with 0.32 billion in 1957 and 0.06 in 1959 which resulted in light migrations to the cultivated districts in those years. In 1958, a 74.5 billion infective overwintering population resulted in an extra heavy migration. In 1952, a 3.15 billion infective overwintering population resulted in a moderate migration to the cultivated districts. (Dorst, Blakemore).

POTATO PSYLLID (*Paratrioza cockerelli*) - CALIFORNIA - Heavy populations occurring on native plants (not identified) in San Ysidro, San Diego County, and on wolfberry (*Lycium* sp.) in the Niland area of Imperial County. (Cal. Coop. Rpt.).

SWEETPOTATO WHITEFLY (Bembisia tabaci) - CALIFORNIA - Heavy populations on mahonia in Woodland, Yolo County. (Cal. Coop. Rpt.).

FLOWER THRIPS (Frankliniella tritici) - NEW MEXICO - Light infestations found in several Dona Ana County onion fields. (N. M Coop. Rpt.).

STRAWBERRY CROWN MOTH (Ramosia bibionipennis) - OREGON - Larvae found infesting 5 percent of plants in a commercial field at Silverton Hills, Marion County, February 29. (Rosenstiel).

VARIEGATED CUTWORM (Peridroma margaritosa) - TEXAS - Populations noted in Harris County. (Texas Coop. Rpt.).

## FOREST, ORNAMENTAL AND SHADE TREE INSECTS

WHITE-PINE WEEVIL (Pissodes strobi) - WISCONSIN - Reports of damage to plantations in Sauk County showed 3 locations 100 percent infested, and 3 locations were 62, 44 and 31 percent infested, respectively. One location in Marquette County was 4 percent infested. The importance of these assessments is indicated by the facts that southern plantings are involved, infestation was continuing on trees 30 feet tall and those trees suffering 3 weevil attacks were numerous. (Wis. Coop. Sur.).

A PINE LOOPER (Semiothisa sp.) - DELAWARE - Larvae and adults, probably S. bisignata, collected in late July and August 1959, on white pines in southern New Castle County. Determination confirmed by E. L. Todd, February 5, 1960. (Burbutis, Mason).

PINE LEAF APHID (Pineus pinifoliae) - COLORADO - Heavy infestation in forestry nursery greenhouses at Fort Collins, Larimer County. (Colo. Ins. Sur.).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - CALIFORNIA - Medium infestation in Chinese elms in Buena Park, Orange County. (Cal. Coop. Rpt.).

ORANGE TORTRIX (Argyrotaenia citrana) - OREGON - Larvae found infesting approximately 100 rhododendron plants in a Portland nursery in mid-February, began emerging as adults March 1. (Larson).

A PLUTELLID MOTH (Argyresthia sp.) - OREGON - Infesting 70-80 percent of several thousand arborvitae and cypress cuttings in Portland area greenhouses and outdoor plantings. Late-instar larvae present in tips examined March 3. (Wieman).

APHIDS - OKLAHOMA - Light infestation of Cinara tujafilina on arborvitae in lathe-houses in Stillwater, Payne County. (Stiles). TEXAS - Unknown species attacking ornamentals in Tom Green County. (Texas Coop. Rpt.). CALIFORNIA - A heavy infestation of Aphis gossypii occurred on buddleia in Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.). NEW MEXICO - Light infestations of unspecified species reported on rose bushes in southern counties. (N. M. Coop. Rpt.).

SCALE INSECTS - CALIFORNIA - A medium infestation of Aonidiella aurantii occurred on euonymus in Porterville, Tulare County. Aspidiotus lataniae was medium on netbush (Calothamnus asper) and apple; and Diaspis cocois infested cocos palm on a property; both in Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.). MARYLAND - Fiorinia externa heavily infesting hemlock at Baltimore, February 29. (U. Md., Ent. Dept.).

GRAPE MEALYBUG (Pseudococcus maritimus) - CALIFORNIA - A heavy infestation occurred on Daphne odora in Berkeley, Alameda County. (Cal. Coop. Rpt.).

PSYLLIDS - CALIFORNIA - Heavy populations of *Psylla uncatoides* occurring on *Acacia* spp. in Belmont, San Mateo County. This pest severely damaged acacia in the bay region of northern California and in San Diego and adjacent counties in the summer of 1959. (Cal. Coop. Rpt.). IDAHO - Adults of *Pachypsylla* sp. emerging from galls formed on hackberry in the river area above Lewiston, Nez Perce County. (Clark, Williamson).

HOLLY LEAF MINERS (*Phytomyza* spp.) - DELAWARE - Two species are involved; one is *Phytomyza* n. sp. and the other is either a new species or a secondary life cycle (or second generation) of *P. ilicicola*. Both are on native American holly. The former species was very abundant during December, January and February in several different areas of the State as partially grown larvae, apparently feeding during warmer periods and forming the common blotch mines. The latter species was rather scarce and most were pupae in linear blotch mines. (Burbutis, Kelsey). MARYLAND - *P. ilicicola* heavy on 2 American holly trees at Clinton, Prince Georges County. (U. Md., Ent. Dept.).

SOUTHERN RED MITE (*Oligonychus ilicis*) - MARYLAND - Eggs heavy on American holly at Lothian, Anne Arundel County. (U. Md., Ent. Dept.).

## STORED-PRODUCT INSECTS

ALMOND MOTH (*Ephestia cautella*) - DELAWARE - Very heavy infestations were observed during December 1959 in soybean meal pellets contained in 5 and 10-pound plastic bags at the University Farm. Most of the soybean pellets had been very thoroughly worked over by the larvae. (Burbutis, Mason).

NAVEL ORANGEWORM (*Paramyelois transitella*) - CALIFORNIA - Heavy population in stored walnuts and nut meats. Many reports over the State from homeowners finding the insect in homes where there are walnuts or almonds. (Cal. Coop. Rpt.).

KHAPRA BEETLE (*Trogoderma granarium*) - CALIFORNIA - A light infestation occurred on a farm property in El Centro, Imperial County. This is a possible reinfestation, as this property was fumigated in 1956. This is the only known infestation currently occurring in the State. Preparations for fumigation are underway. (Cal. Coop. Rpt.).

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) - NORTH CAROLINA - Infestation present in a house in Wake County. (Harkema, Farrier).

A HUMPBACKED FLY (*Megaselia* sp.) - DELAWARE - Several dead pupae found on the inside of a can of mushrooms. These flies are known as important pests of cultivated mushrooms. (Burbutis, Mason, Nov. 28-March 4).

## BENEFICIAL INSECTS

LADY BEETLES (*Hippodamia* spp.) - OKLAHOMA - Several noted in alfalfa fields in Tillman County. (Vinson). None found in alfalfa fields in northern counties or in fields of small grains, generally. (Owens, Vinson, Hatfield, James, Stiles, Henderson).

## MISCELLANEOUS INSECTS

BROWN-BANDED ROACH (Supella supellectilium) - DELAWARE - Many homes in one housing development in New Castle County appear to be heavily infested with this pest. Control efforts by several of the occupants failed. (Burbutis, Mason, Dec.-Jan.). CALIFORNIA - Occurring as a household pest in Fallbrook, San Diego County. (Cal. Coop. Rpt.). UTAH - This species and Blatta orientalis were more commonly encountered in the State during 1959 than was the case 5 or more years ago, and Blattella germanica was less troublesome. (Knowlton).

COCKROACHES - WISCONSIN - Reports and inquiries indicate cockroaches to be more of a problem than during this same period in 1959. (Wis. Coop. Sur.).

BROWN SPIDER BEETLE (Ptinus clavipes) - CALIFORNIA - Heavy population of adults occurred in a home in Oroville, Butte County, causing considerable annoyance. (Cal. Coop. Rpt.).

CIGARETTE BEETLE (Lasioderma serricorne) - NORTH CAROLINA - Numerous in a house in Edgecombe County. (Perry, Farrier).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - NORTH CAROLINA - Infesting a hardwood floor in Guilford County. (Jones, Farrier).

A PHYCITID (Ephestia sp.) - MARYLAND - Observed on new milk cartons at Westminster, Carroll County, February 26. (U. Md., Ent. Dept.).

ANTS - NEW MEXICO - Winged forms of unspecified species causing a nuisance in homes at Las Cruces, Dona Ana County. (N. M. Coop. Rpt.). TEXAS - Camponotus sp. invading homes in Navarro County. (Burleson). MARYLAND - Winged forms of Acanthomyops interjectus interjectus noted in a home at College Park, Prince Georges County, on February 28. Det. M. R. Smith. (U. Md., Ent. Dept.).

TERMITES - DELAWARE - Several infestations of undetermined species noted during the winter in homes in New Castle and Kent Counties. (Burbutis, Mason, Nov. 28-March 4).

CLOVER MITE (Bryobia praetiosa) - DELAWARE - Large population present in a house in New Castle County, January 14. (Burbutis, Mason). COLORADO - A problem in newly constructed homes in Larimer County. (Colo. Ins. Sur.).

## ADDITIONAL NOTES

NEVADA - Adult activity of ALFALFA WEEVIL (Hypera postica) has been negligible to March 4 in most counties due to cool temperatures and wind; practically no spraying has been done. This is in sharp contrast to 1959 when adults were active early in February and much of the spraying was completed or underway on March 4. (Bechtel, Gardella et al.). Larvae of a SAWFLY (Zadiprion rohweri) were collected in trace numbers from Pinus monophylla at Mountain Springs Summit, Clark County, in August 1959. Determined by B. D. Burks. This is the first record of this species in the State. BLACK WIDOW SPIDER (Latrodectus mactans) infestation heavy in a home in Reno, Washoe County. (Bechtel). CLOVER MITE (Bryobia praetiosa complex) common on warm or sunny days and invading homes. (Coop. Rpt.) MOSQUITOES - Aedes campestris, A. dorsalis and A. niphadopsis larvae of all instars, mostly first and second instars, averaged 35 per dip at Gerlach, Washoe County; and in the Fallon-Hazen areas, these species, mostly third and fourth instars, averaged 10-15 per dip. A. niphadopsis larvae averaged 30-50 per dip at Wabuska, Lyon County; and larvae of this species and A. campestris gave variable counts north of Genoa, Douglas County. Culex erythrothorax averaged 10-15 per dip at Fallon, Churchill County; Gerlach, Washoe County; and Schurz, Mineral County. Larvae of Culiseta inornata were present in all the above areas also. (Chapman).

## LIGHT TRAP COLLECTIONS

| | Pseudaletia unipuncta | Prodenia ornithogalli | Agrotis ipsilon | Heliothis zea |
|---|---|---|---|---|
| LOUISIANA | | | | |
| Baton Rouge 2/26-3/3 | 3 | 1 | 1 | 1 |
| Franklin 2/26-3/3 | | | 2 | |

# SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES [1]

1959

## TRUCK CROP INSECTS

General Truck Crop Insects: CABBAGE LOOPER (*Trichoplusia ni*) was a major pest of several crops, primarily crucifers, in several states, but the most serious damage appeared to be in New Jersey, Delaware, Maryland, Georgia and Louisiana.

Damage by cabbage looper was recorded as serious in New Jersey where the pest was not controlled late in the season, moderate during August in the Monmouth area of Maine, troublesome throughout the season in Maryland and heavy during August in Delaware. In Virginia, damage to truck crops in the State was not as much as in 1958. A polyhedrosis virus disease again reduced populations to a large extent during September and for the balance of the season. Damage to tomatoes, potatoes and peppers was also recorded in Delaware.

Moderate to heavy infestations of cabbage looper occurred on cabbage and collards in Georgia and the species was the most destructive pest of cabbage again during 1959 in Louisiana where treatments were not applied. The infestations in that State ranged as high as 100 percent in some cabbage fields and some damage to tomatoes was noted in Bossier Parish during May. Damage to cabbage and lettuce was also reported in southern Texas, with light damage observed on the high plains.

Cabbage looper was about normal in Ohio, except late in the season, when populations became much higher than normal. Populations in southeastern Wisconsin were light in early July, increased to high levels in several counties in early August, but were completely destroyed by a disease by the end of August.

Cabbage looper was light in lettuce during the spring in New Mexico and in areas of Cochise and Maricopa Counties, Arizona; but in the fall the pest became very serious in New Mexico. Most growers in the Mesilla Valley had difficulty in controlling the pest during September. The fall infestations in lettuce did not develop or were easily controlled in Arizona, although the egg counts of this species were high throughout the season. Injury was normal in Utah and populations were much less than in 1958 in Oregon.

TOMATO FRUITWORM (*Heliothis zea*) was serious on several truck crops in various areas of the country during 1959. In the Eastern States, heavy damage was recorded in New Jersey, Delaware, Maryland, Virginia and Georgia. Outbreak numbers appeared from the first week of August through mid-September in New Jersey, with extremely heavy damage occurring to many late season crops. Extensive lima bean acreages suffered serious loss of yield and damage to beans in the pod. Larvae of this pest also caused moderate to heavy damage to beans in late season in Maryland. In Delaware, larval damage was heavy on tomatoes during early August in Kent County, caused considerable damage to lima beans in early September and were of some economic importance in late September and early October on pepper pods in Kent and Sussex Counties. The pest was also common to prevalent on squash, turnips and beets in Delaware in late September and early October. Tomato fruitworm was somewhat higher than usual in Virginia, causing heavy damage to tomatoes and peppers, but only light damage to beans. Infestations in Georgia were generally light to moderate on tomatoes, but became heavy near harvest.

---

[1] Including all reporting states except Hawaii and Alaska, which were carried in CEIR 10(4):46 and CEIR 10(6):74, respectively.

Populations of tomato fruitworm were below normal in Ohio and not serious on tomatoes in Indiana, although the moths were present in sizeable numbers through the late summer in that State. The pest was very abundant in Illinois and was severe in south central Kansas during June and July on tomatoes, however. The pest was light in northeast Kansas although a large moth population was present into October.

Tomato fruitworm caused less damage in 1959 than in 1958 in Arkansas due to the more effective controls used rather than lighter infestations which were comparable for the two years. Slight damage to strawberries was also reported in Arkansas. Damage to tomatoes during May was light in Louisiana, but increased considerably in June, resulting in serious damage in St. Bernard and Plaquemines Parishes. Peppers in Tangipahoa Parish, Louisiana, were also damaged during June, and various crops throughout Texas received economic damage from this pest.

Damage by tomato fruitworm was very low in Utah and New Mexico, but light trap collections in the lower Yakima Valley of Washington were over 3 times any previous year since 1954, except 1958. Damage was as heavy as in 1958 in Washington, if not more. Controls were fair with ground equipment in that State.

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) damaged tomatoes, crucifers and cucumbers in Virginia, but was not as extensive as the cabbage looper. In Delaware, the pest was generally present to fairly common on beans, peppers, cantaloup and pumpkin throughout the growing season and during late August larvae became very abundant in a large asparagus field in Kent County, causing severe defoliation. WESTERN YELLOW-STRIPED ARMYWORM (P. praefica) damaged tomatoes, beets and home gardens in a few northern and some central localities in Utah.

FALL ARMYWORM (Laphygma frugiperda) appeared in August and September in New Jersey, but damage was lighter than usual, and the species was present, but not a problem, on cole crops in the eastern and southeastern areas of Virginia. In Texas, spotted, local infestations occurred in various parts of the State.

ALFALFA LOOPER (Autographa californica) was scarce in the Walla Walla area of Washington during the spring, with almost none recorded on spinach in the fall nor on peas in the northwestern area. Infestations in the Milton-Freewater area of Oregon were much less than in 1958.

GARDEN WEBWORM (Loxostege similalis) damaged crucifers, tomatoes, peppers and cucumbers in Virginia, but not as extensively as cabbage looper; and larvae caused light damage to pepper foliage in mid-August in New Castle County, Delaware. The pest was also common to abundant and caused moderate feeding injury during October to beets in Delaware.

EUROPEAN CORN BORER (Pyrausta nubilalis) larvae caused considerable feeding injury to potato vines throughout the season in Delaware, with the greatest damage occurring in June. In mid-June, larvae were prevalent in Delaware, causing heavy feeding injury on lettuce in Kent County, and from late August to September, larvae were abundant in most unsprayed peppers in Kent and Sussex Counties. Larvae were also fairly common in beans in late June and early October in that State. Damage to pepper plants in Maryland during late season was heavy, but not as serious as in 1958. In Virginia, potatoes and peppers were among the most heavily damaged crops. The incomplete, limited fall survey in North Carolina revealed 56 forms per 100 stalks in areas previously with high infestations in potatoes in Pasquotank County, with over 7 percent pupated. Moth flight began April 21 in the Coastal Plain, 10 days after first blossoms of lily-of-the-valley in Raleigh.

STALK BORER (Papaipema nebris) was locally troublesome on peppers and tomatoes in South Kingstown, Rhode Island, during early July and on beans and other garden plants in West Barrington area in early August. The pest was quite a problem in strawberries in southeastern Virginia and in the Eastern Shore counties, and damaged tomatoes and sweet corn in the northeast and east central areas of Kansas.

CUTWORMS were damaging to truck crops in several states during the year. Damage in Maine was recorded as follows: Moderate on tomatoes in Twin County in May; moderate to severe on crucifers, beans, tomatoes and peas in several gardens at Presque Isle in June; light on lettuce at Cape Elizabeth in June; light in Jonesboro area in June; moderate in Cumberland County and in Orrington area; severe on cabbage; moderate on all garden crops in Orono area; and severe on tomatoes (500 of 800 plants destroyed in June) in Harrison area. In Virginia, VARIEGATED CUTWORM (Peridroma margaritosa), BLACK CUTWORM (Agrotis ipsilon), Feltia sp. and several undetermined species damaged crucifers, cucurbits, peppers, tomatoes and sweetpotatoes in many parts of the State.

An undetermined cutworm caused considerable damage to pimento pepper in Troup County, Georgia, and GRANULATE CUTWORM (Feltia subterranea) damaged sweetpotato seedings in St. Landry Parish, Louisiana. Variegated cutworm caused minor damage to gardens and potatoes in localized areas of Arkansas and spotted, cutworm infestations occurred throughout Texas. Damage by cutworms was spotted and locally severe in Illinois and was moderate, generally, during the spring in Utah. Cutworms also became a problem in several Dona Ana County, New Mexico, lettuce fields during March and were heavy on sugar beets in Churchill County, Nevada, where they caused 10 percent loss. In Oregon, black cutworm and variegated cutworm were abundant on beans and sweet corn in the Willamette Valley, requiring control measures about June 12.

POTATO LEAFHOPPER (Empoasca fabae) was a problem on truck crops in some areas of Virginia, was troublesome on beans and potatoes on the Eastern Shore of Maryland during May (somewhat above normal) and was generally common on potatoes, beans, peppers and pumpkin in Delaware. In Indiana, commercial potato growers had to repeat control at weekly intervals to obtain control and serious damage to garden beans was also observed. Populations in Ohio were higher than normal on untreated potatoes but were of no importance when controls were applied. In the Dakotas, the first specimens were reported from Brooking County, South Dakota, during the first week of June and on June 12 at Fargo, North Dakota. The initial migration appeared heavier than normal in North Dakota. Adults were easily recovered in most crops on June 15 in that State and population development in potatoes was gradual and reached peak on August 2. Counts were 1-3 per sweep during the peak period in North Dakota and severe "hopperburn" occurred in home gardens and some commercial fields not protected. Populations remained quite high during the growing season in North Dakota and medium densities remained until frost. In South Dakota, populations were light throughout the year and very little "hopperburn" damage appeared in potato fields.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) was common on carrots during July and August in Delaware, causing no appreciable feeding injury, and a leafhopper, believed to be this species, caused generally light to moderate injury to untreated potato fields in Maine during August.

Six-spotted leafhopper caused very little damage to crops susceptible to aster-yellows virus in Ohio, but the incidence of aster yellows was higher in 1959 than in 1958 in Wisconsin. This species was a serious pest in South Dakota, even though counts were lower than in 1958, and relatively high populations that appeared in late May and early June did not develop in Minnesota. In North Dakota, populations of the insect were mostly light in the northern Red River Valley counties but a rather high incidence of purple-top virus did occur in some areas. The first migrants of six-spotted leafhopper were caught in Middleton, Wisconsin, on April 26 in a blacklight trap and migrations were first noted on May 11 in southeastern North Dakota. The center of the early migrations in Wisconsin was between Madison and the Mississippi River. At least one percent of the first migration was capable of aster-yellows virus transmission. In mid-June, populations were low in potatoes in southeastern area of Wisconsin but fairly high in the Oneida County area. Aster yellows began appearing in late June in southeastern Wisconsin. In Washington, aster yellows appeared strong in cultivated asters by mid-July but none were found in potatoes.

INTERMOUNTAIN LEAFHOPPER (Empoasca filamenta) and six-spotted leafhopper caused moderate damage to vegetable crops in local areas of Utah, and E. filamenta increased to heavy populations on potatoes in Nevada. Intermountain leafhopper also caused some leaf spotting in potato fields in southeastern Idaho during August and became extremely abundant in many fields in Bingham and Power Counties, Idaho, during mid-August.

In Maine, undetermined leafhoppers were reported as feeding generally in the Monmouth area during May and causing moderate damage to potatoes in Cumberland County and at Monmouth in June, as well as causing moderate damage to lettuce in June.

LYGUS BUGS (Lygus spp.) were numerous, 3 to 4 per square foot, in cultivated fields around Hermiston, Oregon, on March 16, but were of no more economic importance than usual with proper controls. Several species were abundant on sugar beets in crops in southern and northern Utah and controls were applied to seed beet plantings. They also caused losses to cabbage in Colorado. TARNISHED PLANT BUG (L. lineolaris) was abundant on a great variety of truck crops in Delaware, being similar to the conditions in 1958 in that State. The heaviest infestations occurred on lima beans during late August and early September and on turnips through October. In Maine, this insect caused generally light to moderate injury to untreated potatoes in the Aroostook area in August.

A FALSE CHINCH BUG (Nysius sp.) severely damaged radishes, lettuce and, to a lesser extent, tomatoes in the Kansas River Valley of Kansas during June. CONCHUELA (Chlorochroa ligata) infestations were spotted and local in various parts of Texas, and GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was a problem on truck and garden crops in some areas of Virginia.

GREEN PEACH APHID (Myzus persicae) was a serious pest of several truck crops during 1959. Those states reporting heavy infestations were Rhode Island, New Jersey, Delaware, Maryland, Virginia, Florida, Arizona and Washington.

In the Eastern States, M. persicae was severe on untreated potatoes by July 9 in Rhode Island; was very numerous on potatoes, tomatoes, spinach, lettuce, Chinese cabbage and other vegetables in New Jersey; became abundant by the first of August and remained so until late September on pepper and potato foliage in Delaware, as well as being abundant on spinach during October in that State; required treatment on peppers in northern Worcester County, Maryland; was important on spinach and lettuce in Virginia; and heavily infested potatoes during late December 1958, in Florida. The infestations on pepper were first noted June 20 to 26 in Delaware and the pest first appeared December 13, 1958, in Dade County, Florida. By February, infestations had nearly disappeared in Florida, however. The treatments for this pest were more than normal in New Jersey.

In the Central States, green peach aphid was unusually abundant on a number of vegetable crops in Ohio, especially potatoes, and was reported infesting potatoes in Indiana.

In Arizona, flights of green peach aphid were extremely heavy in the Yuma area during early March. Infestations of lettuce and most host crops were kept low by controls in all major areas of the State during the spring. Sugar beets were heavily infested in some central Arizona areas, but fall infestations in lettuce were very light, generally. Infestations were reported in Colorado on potatoes.

In the Northwestern States, migration of green peach aphid from peaches started the last week of April in eastern Washington. Propagation of the species was slow on potatoes in May in Washington but was very rapid in June, with foliage 100 percent infested in the Yakima Valley and Columbia Basin localities by late June or early July. The buildup of the species was steady in Klamath Falls area of Oregon, with a 6 to 16 percent infestation on July 20, and the populations of this pest were generally light in potato fields in Canyon County, Idaho, during July. Population counts became higher in the eastern area of Idaho, particularly in the Ashton area, by mid-July. By late July, up to 50 percent of the plants in some potato fields in eastern Idaho showed symptoms of leafroll virus disease. The unseasonably hot weather, starting about mid-July, in Washington, reduced aphids to near zero, but not before some fields of potatoes had been heavily damaged. Control was good in Washington but the spread of virus diseases was greater than normal in Whatcom County. Populations in Oregon continued to multiply throughout the season in nontreated plots.

An intensive survey of wild and escaped roses in the central and western areas of Washington showed these plants not to be overwintering hosts for green peach and potato aphids.

POTATO APHID (Macrosiphum solanifolii) activity was first observed in Kingston, Rhode Island, area on June 15. The pest built up to severe infestations on untreated potatoes in South Kingstown by July 9 in Rhode Island; colonies were found throughout Delaware on spinach, potatoes, tomatoes and pumpkins and in Virginia it was an important pest on potatoes and tomatoes. As in 1958, the insect never reached injurious proportions in Delaware; however, it did become numerous in pumpkin fields by late September. Potato aphid was reported on potatoes in Indiana, Colorado and Idaho, with populations in the latter State being very low throughout the season and never more than two per leaf in all potato fields in the eastern area.

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) adults were present to common on a large number of crops in Delaware but were not serious on any one crop in that State during the year. The pest became exceptionally abundant in Indiana and Illinois where it caused considerable damage to various cucurbits and other plants. Infestations on cucurbits were also light to heavy in Georgia and abundant in South Dakota, and susceptible crops and flowers were moderately damaged in southern Utah.

Heavy infestations of another CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) in New Mexico damaged melon plants at Virden, Hidalgo County, and at Los Lunas, Valencia County, and also caused minor damage to young lettuce in Hidalgo, Dona Ana and Eddy Counties.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata) was reported damaging beans in the Hillsboro area and tomatoes in the Willamette Valley of Oregon. Damage to tomatoes was caused when fruit touched the ground. Larvae were active in the Springfield area of Oregon as late as October 23.

BANDED CUCUMBER BEETLE (Diabrotica balteata) defoliated beans and peas in the Miami, Florida, area in July and was more widely prevalent than for many years on tomatoes, avocados and beans in May in the Homestead area of that State. The pest did not seem to respond to control measures. In Louisiana, sweetpotatoes were severely damaged by larvae near Arnaudville.

STRIPED CUCUMBER BEETLE (Acalymma vittata) adults were abundant and caused damage to cucurbits in Delaware and on the Eastern Shore of Maryland during May and June; but the pest was not as abundant in Duplin County, North Carolina, as in previous years. Light to heavy populations of the species occurred on cucurbits in Georgia and the species was common early in the season in Indiana, but below normal in Ohio. Populations were abundant on cucurbits throughout the season in South Dakota and numbers were large enough to require control in a commercial pickle area in Arkansas. The pest also caused moderate damage to susceptible crops and flowers in the southern portion of Utah.

GARDEN FLEAHOPPER (Halticus bracteatus) adults were generally common throughout the season on beans, cucurbits, potatoes, tomatoes, peppers and beets in Delaware, although injury was not apparently serious on any one crop. YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) was heavy locally in Louisiana on turnips in January and on mustard and peppers in April.

FLEA BEETLES required treatments on tomatoes, potatoes and cole crops in Maryland; were a major problem in many instances in crucifers, beans, potatoes, tomatoes and cucumbers in Virginia; and were abundant on potatoes in Indiana where repeated treatments were necessary. In Delaware, a flea beetle (Phyllotreta cruciferae) was present on radishes in Sussex County in early May and common on mustard in Kent County until early June. Phyllotreta spp. damage was generally moderate in gardens in Utah, with an occasional potato field being severely damaged, and Systena sp. infested sugar beets in some areas of Colorado.

PALE-STRIPED FLEA BEETLE (Systena blanda) adults were common on peppers and snap beans during the first half of June in Sussex County, Delaware, causing moderately heavy feeding injury. Adults also became common on lima beans in August in Delaware and were reported on pumpkins. The pest was recorded on potatoes in Colorado and what was thought to be this species caused heavy losses to turnips in late October in central Indiana.

A STRIPED BLISTER BEETLE (Epicauta sp.) infestations were light to moderate on tomatoes in several southern counties of Georgia (usually not a pest of tomatoes in that State); frequently caused damage to vegetables in gardens in central and southern Nebraska during August; and defoliated beets in East Baton Rouge Parish and some potatoes in Caddo Parish, Louisiana. BLACK BLISTER BEETLE (Epicauta pennsylvanica) frequently caused damage to vegetable gardens in central and southern Nebraska during August, and MARGINED BLISTER BEETLE (E. pestifera) was present on potatoes in early July and caused heavy damage to beets and lima beans during late July and early August in areas of Delaware.

VEGETABLE WEEVIL (Listroderes costirostris obliquus) was heavy on pimento pepper which followed mustard in Spalding County, Georgia; attacked newly set lettuce in New Hanover County, North Carolina, in early February; and was heavy locally on turnips in January and on mustard and peppers during April in Louisiana. WHITE GRUBS (Phyllophaga spp.) were moderate to heavy in Portage, Eau Claire, Waushara, Winnebago, Brown, Monroe, Calumet, Jackson, Sauk, Price, Taylor and Kewaunee Counties, Wisconsin.

WIREWORMS (various species) were generally higher than in previous years in Idaho. Heavy infestations in some potato fields in Fremont County were as high as 20 larvae around a single seed piece during June. They also caused some damage to sugar beets in Franklin County, Idaho. Ctenicera sp. damaged potatoes in San Juan County, Washington, and fields which were soil treated as long as 10 to 12 years ago in Wisconsin have not had to be retreated for wireworm control in most cases.

SEED-CORN MAGGOT (Hylemya cilicrura) was light to moderate in Maine, causing light injury to spinach in the Gray area in June and moderate injury to lima beans in the Monmouth area in July. In New Mexico, adults were abundant in Hidalgo County lettuce fields during May; and the pest damaged onions in Colorado, less so than plant disease, however. The insect caused more than normal damage to beans and sweet corn seedlings in the Willamette Valley of Oregon, and was present throughout the past winter in Washington. The peak in Washington was about December 30, 1958. Many gravid females were present in the Walla Walla area in February and the first spring brood occurred during mid-March in that area of Washington, but later in March at Pasco. Heavy flights occurred in May and June. Large numbers of flies that were killed by a fungus disease (probably Entomophthora muscae) were found on potato foliage in the Yakima Valley during June. ROOT MAGGOTS were very prevalent in vegetable-growing areas of Illinois and caused considerable damage.

LEAF MINERS were very abundant in the Redlands area of Dade County, Florida, on December 31, 1958, on beans, potatoes and tomatoes. They were also abundant enough to become serious in February, being more abundant than for about 3 years. A leaf miner (Liriomyza sp.) was also reported as a problem on truck and garden crops in some areas of Virginia and caused noticeable foliage injury to tomatoes, squash and cucumbers in various sections of Maryland.

GARDEN SPRINGTAIL (Bourletiella hortensis) and other springtails damaged 300 acres of vegetable plantings during May in the Puyallup Valley of Washington.

GARDEN SYMPHYLID (Scutigerella immaculata) was present on most vegetables in the Willamette Valley of Oregon, about the same number as in 1958, and the pest destroyed early plantings of onions and spinach in Whatcom County, Washington, as well as corn, beans, raspberries and strawberries in the western area of Washington during May and June. Garden symphylid also infested sugar beets in some areas of Colorado.

A THRIPS (Haplothrips clarisetis), which was reported for the first time in the United States during 1959 in Riverside County, California, was also found for the first time in New Mexico during the fall of 1958, but was not identified until the spring of 1959. The pest killed young lettuce plants in several lettuce fields in Dona Ana County, New Mexico, during March 1959. Other thrips (Frankliniella spp.) also caused considerable damage to lettuce fields in Dona Ana and Eddy Counties, New Mexico, and Sericothrips variabilis adults were present to common in beans in Kent and Sussex Counties, Delaware, but they never reached economic levels on this crop during the year. Undetermined thrips were favored by dry weather in July in Maryland and were abundant on beans, cucumbers, onions and peppers.

GRASSHOPPERS damaged garden and truck crops in Rio Arriba, Taos, Curry, Roosevelt, San Miguel and Lea Counties, New Mexico, and Melanoplus sp. infested sugar beets in some areas of Colorado.

SPIDER MITES were high in nearly all areas on strawberries in Minnesota; heavy on strawberries in Delaware in mid-April; caused light to severe damage to raspberry in a number of counties in Utah; and were pests of truck crops and home gardens, especially cabbage, beans and tomatoes, in Virginia. MITES were also the most numerous and common pests of vegetable gardens in Nevada.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was serious on melons in southern Indiana in mid-July and was abundant on mint grown on lighter soils in early August. This species also damaged tomatoes in eastern Kansas and complete defoliation of tomatoes occurred in northeastern Kansas. Populations of this species temporarily increased on vegetables in southeastern Nebraska during July, causing moderate to severe damage. The pest was generally light in Ohio, however, and caused some damage to beans in Utah.

In Idaho, two-spotted spider mite populations were much higher than in previous years on beans and potatoes in the southwestern area and many fields required controls. Some bean fields in the Twin Falls area received extensive injury during early August and severe damage to a commercial sugar beet field during late September was reported.

Infestations of this species on potatoes in Washington started in the Quincy area in June, but was not seen near Moses Lake until July. The pest was damaging to potatoes for the third consecutive year in the Quincy area in August and September and was abundant and required controls on both mint and potatoes in the Yakima Valley. In Oregon, the mite was heavy on pole beans east of Independence in August and light to moderate during the late summer on hops around Salem, Brooks and Ontario.

Another SPIDER MITE (*Tetranychus cinnabarinus*) built up to heavy infestations in the central area of Arizona on sugar beets during April and was extremely heavy in late April and May.

SLUGS were damaging in several states during the year. *Limax flavis* was active on vegetables and flowers in Dare County, North Carolina, during May; and *Agriolimax agrestis* and *Arion ater* were very damaging to ripe strawberries in the western area of Washington, with up to 75 percent of the first pickings being lost during May and June. GRAY GARDEN SLUG (*Deroceras reticulatum*) was also injurious to seedling carrots, beans and strawberries in Oregon during May. Damage continued high in the Willamette Valley of Oregon, especially during the late summer and fall, and became serious on commercial strawberries.

*Insects Attacking Solanaceous Crops*: Populations of POTATO PSYLLID (*Paratrioza cockerelli*) were present on potatoes and tomatoes in Colorado and in the western area of Nebraska during 1959. In the latter State, they varied from light to moderate throughout the season, with as many as 32 adults per 100 sweeps being taken in some fields in the western area during August. The distribution of the pest did not follow the pattern of 1958 in Wyoming. Potato psyllid was found at Pine Bluffs, Torrington, Wheatland and Powell-Cody in Wyoming in 1959. Counts per 100 sweeps at various locations in that State were as follows: June 10 - 1.67 at Torrington on lycium; July 3 - up to 74 on lycium at Wheatland,12 to 15 at Torrington on potatoes; July 17 - one or less at Powell-Cody; August 7 - 2.2 at Powell-Cody. Counts dropped rapidly in all locations in Wyoming after August 10 and only traces of damage were observed throughout the State. Controls were effective.

For additional information on potato psyllid during 1959, see the special notes on pages 215, 284, 384, 459, 512, 576 and 625 of the CEIR which covers the special surveys of overwintering hosts and the five surveys in the summer breeding areas.

The potato aphids in Maine were summarized as follows: Migration of POTATO APHID (*Macrosiphum solanifolii*) began in late May in the Aroostook area and BUCKTHORN APHID (*Aphis abbreviata*), GREEN PEACH APHID (*Myzus persicae*)and FOXGLOVE APHID (*M. solani*) began to migrate in early June, with spring migration of all four species nearing completion near the end of June. Populations were very small in June, increasing through July, although numbers were still relatively small, and then began to decline in August. Infestations were spotty and variable. Potato aphid predominated during the season, followed in decreasing order by buckthorn aphid, green peach aphid and foxglove aphid. The fall migration of potato aphid began August 21. Predators, parasites and fungus diseases were important in depressing aphid populations.

LEAF-FOOTED BUG (*Leptoglossus phyllopus*) averaged 10 per potato terminal in Tangipahoa Parish, Louisiana, in April and did considerable damage. The pest was also light on tomatoes in May, but by mid-June averaged 60 per 100 sweeps, and was present in large numbers on peppers in several areas of Louisiana.

POTATO TUBERWORM (*Gnorimoschema operculella*) caused considerable damage to fall potatoes in Accomack and Northampton Counties, Virginia; and damaged two potato fields at Beryl, Iron County, Utah, during harvest. In Arizona, light infestations of larvae were found in tubers in Yuma County in June; the first known occurrence of larvae infesting potato tubers in the State. Moths are normally picked up each year in Arizona but not until after potato harvest is completed.

Spotted, local infestations of TOMATO PINWORMS occurred in various parts of Texas.

HORNWORMS (*Protoparce* spp.) were about normal on tomatoes and peppers in Maryland, with a few heavy infestations requiring controls. In Delaware, eggs were found on pepper foliage in mid-June and by early July larvae were abundant in small plantings and present to common in some large plantings in the State. In late August, larvae were again abundant in untreated pepper fields in Delaware and larvae were present in most tomato fields. Infestations in Georgia were light on tomatoes but became serious on pimento pepper in Henry County.

The second generation of TOBACCO HORNWORM (Protoparce sexta) was abnormally high in southeastern and south central Indiana on tomatoes; and larvae of TOMATO HORNWORM (P. quinquemaculata) were common in untreated tomato fields in Tippecanoe County, Indiana, late in the season but not as abundant as tobacco hornworm. Parasitism of tobacco hornworm in Indiana by Apanteles congregatus ranged from 50 to 100 percent. Damage to tomatoes by tobacco hornworm was severe in Tippecanoe County, both from the viewpoint of fruit injury and defoliation. Tomato hornworm was active over Kansas during the season as indicated by light trap collections.

Infestations of hornworms were normal on tomatoes and potatoes in Utah, present in Colorado on tomatoes and a minor problem in tomato and chili fields in New Mexico where adequate controls were used.

SALT-MARSH CATERPILLAR (Estigmene acrea) caused moderate damage to potatoes in the Buxton area of Maine during August.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) infestations in the Eastern States were light to moderate on tomatoes in Georgia; generally under control in large commercial plantings of tomatoes and potatoes in Delaware but were very destructive to small plantings from the first of June to the end of August; light to moderate on commercial plantings of tomatoes and potatoes in Maryland; and a minor problem on potatoes and tomatoes in Virginia. The first adults were observed during the first week of May on potatoes and tomatoes in Delaware and the last week of May in Rhode Island, with larvae becoming abundant the week of June 22 in Rhode Island.

Infestations of Colorado potato beetle in Texas were spotted and local, as was the damage in Weber and Davis Counties, Utah. In North Dakota, infestations were generally light, with slight increases over 1958 noted in Pembina County. Some late-treated potato fields in Grand Forks, Walsh and Pembina Counties, North Dakota, were seriously damaged.

Unusually large numbers of Colorado potato beetle adults overwintered in Washington. Emergence started the last of April in the eastern area of that State and extensive larval feeding damaged potatoes from late May until mid-September. In Idaho, unusually large populations developed in potato fields in the south central and eastern areas during June and July, with severe damage being reported in some areas. Populations in Latah County were much higher than noted in previous years.

THREE-LINED POTATO BEETLE (Lema trilineata) caused considerable concern and some damage locally in potato fields in Rhode Island; and adults of the species were present on potatoes in Sussex County, Delaware, in early May but they never reached economic proportions in the State during the year. The buildup in Rhode Island has been continuous over a period of time since the discontinuance of DDT in the insecticide program on potatoes. During 1959, adults of the species first appeared during the week of May 25 in Rhode Island and by June 10 many eggs were evident although no hatching had occurred. The hatch began during the week of June 15, with larvae locally abundant until the first pupae was observed July 7. New generation adults first appeared on untreated potatoes July 20.

POTATO FLEA BEETLE (Epitrix cucumeris) adults caused economic damage in several areas. In Rhode Island, adults were abundant and severe on untreated potatoes during late May and early June; and adults became very abundant in some potato fields in New Castle County, Delaware, in June. Adults were also present on tomatoes, beans and peppers in Delaware. Populations were generally light in Ohio, but they became extremely high in North Dakota where counts of 10 to 30 per sweep were common in untreated fields on August 8. Tuber damage from second-generation larvae occurred in some fields of North Dakota. Adults, of what was believed to be potato flea beetle, were light on tomatoes and cucumbers in Maine during May and were present in only trace numbers during August in the Aroostook area. No reports of appreciable numbers or feeding injury were received in Maine.

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) adults were present to common in potato fields during May and early June in Delaware, and populations were below those of 1958 in Nevada even though some defoliation occurred in several fields in Lyon County.

WESTERN POTATO FLEA BEETLE (*Epitrix subcrinita*) appeared in light to moderate numbers throughout the Willamette Valley of Oregon; and numbers of the species were generally low throughout southern Idaho, with the exception of one potato field in the Parma area where severe damage occurred to potato tubers during August.

TUBER FLEA BEETLE (*Epitrix tuberis*) appeared in scattered localities in Oregon, being abundant on some potatoes near Corvallis; and second-brood larvae of the species caused extensive damage to potatoes at Yakima, Washington, in July. The pest was also recorded on potatoes in Colorado during the year. The species has yet to be recorded in the Columbia Basin of Washington.

Adults of IMBRICATED SNOUT BEETLE (*Epicaerus imbricatus*) were very abundant on potatoes in Kent County, Delaware, during early May, causing moderate feeding injury; and they were also present on strawberries in New Castle County.

Moderately heavy infestations of BLISTER BEETLES caused some damage to tomato plants in Lea County, New Mexico, during June.

PEPPER MAGGOT (*Zonosemata electa*) caused the usual damage to peppers in southern New Jersey.

VINEGAR FLIES (*Drosophila* spp.) were extremely troublesome at tomato canneries late in the season in Maryland and became abundant in tomato and pepper fields in Sussex County, Delaware, the latter part of August. *D. melanogaster* ranged from extremely low about August 10 to extremely high by September 7 in tomato fields in Indiana. Considerable damage occurred in some tomato fields in Indiana, with the additional factor of grasshopper feeding scars being excellent oviposition sites for *Drosophila* spp. *D. melanogaster* populations in Utah tomato fields were about the same as in 1958, with the heaviest populations originating near orchards in mid-September and early October where substantial fruit drop occurred or culled fruit was discarded. Populations normally decreased in Utah after cool fall weather.

FIELD CRICKETS (*Acheta* spp.) were reported killing young tomato plants during May near Deming, Luna County, New Mexico.

TOMATO RUSSET MITE (*Vasates lycopersici*) was encountered in only one field during 1959 in Utah, but losses were reported in tomato fields in Luna County, New Mexico; the first year that the species has been serious in the county.

*Insects Attacking Cucurbits*: MELON APHID (*Aphis gossypii*) became numerous in watermelon and cantaloup in Sussex County, Delaware, during mid-August but did not appear to be injurious. Counts were high in home gardens in east central South Dakota and damage to cucumbers, squash and cantaloups was normal in Utah.

SQUASH BUG (*Anasa tristis*) was present in several squash and pumpkin fields in Delaware, but did not build up to serious numbers. The pest was reported general but less than normal in Utah; and it caused severe damage to melons and squash in Clark, Lincoln and Nye Counties, Nevada. HORNED SQUASH BUG (*A. armigera*) adults were present to fairly common on watermelon, squash and cantaloup in Kent and Sussex Counties, Delaware, during July and early August.

A FLEAHOPPER (Spanogonicus albofasciatus) was collected from melons in Churchill, Clark and Nye Counties, Nevada, for the first time in 1959. Though this species may have been present in the State for some time, it was not officially reported. In Churchill County, growers attributed excess blossom and young melon drop of cantaloup to this pest.

MELONWORM (Diaphania hyalinata) and PICKLEWORM (D. nitidalis) damaged an estimated 90 percent of the untreated cucumbers in Tangipahoa Parish, Louisiana. Three melonworm adults were taken in argon light traps in Imperial and Riverside Counties, California, in the Colorado River desert area in the late fall. Survey on wild gourds disclosed three larval infestations in the Bard Valley of Imperial County.

PUMPKIN CATERPILLAR (Diaphania indica) was identified from material collected in light traps at Bradenton, Manatee County (1955); Siesta Key, Sarasota County (1957); and Homestead, Dade County (1958). These collections represented the first record of this species in the United States. See CEIR 9(47):1012 for additional information on this pest.

Insects Attacking Crucifers: IMPORTED CABBAGEWORM (Pieris rapae) infestations were general in Delaware, Maryland and Virginia. The pest was numerous to abundant on cabbage in Delaware, causing moderate to heavy feeding injury during late July and again in early October in New Castle and Kent Counties. Damage in Virginia was not as extensive as that caused by cabbage looper, however. In Maine, moderate infestations caused light damage in the Monmouth area in July and in August the pest caused moderate damage to cabbage. Infestations were heavy on cabbage in several southern Georgia counties but about normal in Ohio.

Moderate numbers of imported cabbageworm adults, eggs and larvae were present in southeastern Wisconsin on cabbage in early July. In Columbia County, 72 percent of the insect larvae found on cabbage was this species. Some Outagamie County cabbage fields had high populations ranging from newly hatched to mature larvae and this same condition existed in Racine and Kenosha Counties, Wisconsin, in early August. At the end of August, however, populations were completely destroyed by disease.

Infestations of imported cabbageworm were recorded as heavy on cabbage at Corrales, Sandoval County, New Mexico, during September; normal in Utah; consistent on broccoli and cauliflower in Oregon; and not a problem in northwestern Washington. The populations were slightly more abundant than in 1958 in Oregon and controls were indicated in most Willamette Valley broccoli fields the week of August 17.

SOUTHERN CABBAGEWORM (Pieris protodice) was reported heavy on turnips at Shongaloo, Louisiana; apparently the first record of the species in the State.

DIAMONDBACK MOTH (Plutella maculipennis) infestations were light to moderate on cabbage in Georgia and they damaged cucurbits in Virginia but not as extensively as did cabbage looper. Larvae of this species were very common to fairly abundant in Delaware and caused light to moderate feeding injury to turnips, horseradish and cabbage in Kent County toward the middle of June. In Columbia County, Wisconsin, about 12 percent of the insect larvae found on cabbage was this species. The pest was also reported as being present in relatively low numbers in Oregon but slightly more abundant than in 1958 in the Willamette Valley, and diamondback moth was light on cabbage and cauliflower during February and March in Arizona but not heavy enough to require controls.

HORSERADISH FLEA BEETLE (Phyllotreta armoraciae) adults were abundant and caused heavy feeding injury to horseradish foliage in New Castle County, Delaware, the first of July. In Maine, what was believed to be CABBAGE CURCULIO (Ceutorhynchus rapae), caused light injury to cabbage in the Boothbay area in July; and CABBAGE SEEDPOD WEEVIL (C. assimilis) was damaging to untreated fields in Washington. This latter pest has remained stable in Washington since the current chemical controls started in 1948.

HARLEQUIN BUG (Murgantia histrionica) was numerous and became a problem in several states west of the Mississippi River during the year. Heavy populations on cabbage and related crops were reported in eastern and southeastern Arizona; throughout New Mexico, especially Valencia and Lea Counties; the Winter Garden area of Texas; and southeastern Nebraska. Populations in Oklahoma were the heaviest in several years and caused extensive damage to home gardens during May and June. The pest was also unusually heavy in Kansas during July and was reported being present in gardens in South Dakota, as well as causing losses to cabbage in Colorado. The pest was recorded in Minnesota for the first time in 1959 and was also recorded in Wisconsin during the year.

CABBAGE APHID (Brevicoryne brassicae) infestations ranged light to heavy on cabbage in Georgia and were important on cabbage, kale and collards in Virginia. Colonies were very abundant in a few cabbage fields during May in Sussex County, Delaware; and during early July and early August, colonies ranged from present to fairly abundant on cabbage and broccoli in Kent and New Castle Counties. In Wisconsin, populations were heavy on some plants in Jefferson County and numbers were light to moderate in Racine and Kenosha Counties in late August.

In the southwestern area of the country, light to moderately heavy cabbage aphid infestations damaged cabbage in Bernalillo, Otero, Sandoval and Lea Counties, New Mexico; and infestations were medium to heavy during late March in the central and southwestern areas of Arizona on cole crops. The populations remained heavy in Arizona until the hot summer weather.

In the Northwestern States, infestations of this aphid were not a problem in northwestern Washington and adults were scattered over new transplantings of broccoli and cauliflower in the Woodburn area of Oregon in late July.

TURNIP APHID (Rhopalosiphum pseudobrassicae) was important on turnip and mustard during 1959 in Virginia.

CABBAGE MAGGOT (Hylemya brassicae) infestations were moderate and damage light in the Monmouth area of Maine in July; and the species was reported to have destroyed 50 to 75 percent of the untreated cabbage, turnip and radish plantings in Illinois. Much of this damage in Illinois could have been averted by timely use of controls. Some growers reported poor control with insecticides. Field observations in Illinois indicate possible resistance to recommended chemicals in some areas. Damage in Wisconsin was about as severe as in any year in the last decade. The larval stage was present on June 1 in southeastern Wisconsin. In Washington, large acreages of turnips, rutabagas, cabbage and cauliflower were totally destroyed in King County despite soil treatments and multiple sprays with chlorinated hydrocarbons. A tremendous adult population was present in September in Washington and a high level of resistance has developed to both chlorinated hydrocarbons and organic phosphates.

Insects Attacking Beans and Peas: PEA APHID (Macrosiphum pisi) was most important in the pea-producing State of Wisconsin during 1959. In this State, it was first observed in peas on May 20 in Sauk County. Counts were low in peas in southern areas of the State on June 12 and none were found in St. Croix and Polk Counties; however, on this date average counts were higher in Kewaunee, Sheboygan and Manitowoc Counties, where some control was necessary. Populations increased markedly in late peas during early July in Wisconsin and control became general in the southern area. Treatments were at a higher level in 1959 than in 1957 or 1958. Aphid parasites were noted in many instances.

In the Eastern States, pea aphid was about normal on peas in Maryland, being well controlled on commercial acreages; and never reached economic proportions on peas in Delaware even though a buildup began in May. Infestations of peas in Virginia were important, however.

In the Western States, pea aphid injury to canning peas was light in Utah and populations were generally much below those of 1958 in the northern pea fields of Idaho. In Oregon, infestations in the eastern area were light on commercial peas during May, but they became increasingly numerous during the season along with other aphids in the State. Pea aphid began to leave alfalfa during May in Washington but few had entered pea fields by mid-May. Populations in Whitman County peas were low during June, with less treatment than in the previous five years. Most late peas in the Walla Walla area were treated and all peas in Skagit County were treated, with infestations being severe where skips were made in the fields. Very little incidence of virus was observed in the Walla Walla area. Pea aphid began to appear abundantly in pea fields near Ruebens, Idaho, during July, but damage was not extensive since predators and parasites appeared to keep populations under control.

BEAN APHID (Aphis fabae) colonies were found in early June on snap beans in Sussex County, Delaware, and by mid-June colonies were fairly common. In early July, very heavy infestations were found on beans and in mid-August infestations remained heavy in some lima bean fields. In Oregon, infestations appeared earlier than normal, with numbers far above normal on beans. The insect became abundant shortly after the first of June, but was then held back by a fungus disease. Extensive infestations were again noted in late June and July in Oregon, especially in Washington County, with colonies building up steadily in central and southern Willamette Valley. In Washington, new summer colonies developed rapidly on weeds during May in the Puyallup Valley and became abundant on garden beans and other crops by mid-July, some of which required controls.

GREEN CLOVERWORM (Plathypena scabra) larvae were fairly common but not serious on beans in Sussex County, Delaware, during September. Larvae also caused noticeable feeding injury to lima beans in the southern area of that State during August.

BEAN LEAF BEETLE (Cerotoma trifurcata) adults were more abundant than in 1958 in Delaware, with considerably more damage to several truck crops being observed. In general, adults were common and caused moderately heavy damage to beans during mid-June in Delaware. In the other Eastern States, adults caused moderate to heavy foliage damage to beans on the Eastern Shore of Maryland; were of minor importance on beans in Virginia; and caused noticeable injury on beans in early May in North Carolina which was earlier than ever before in the southeastern counties of that State. In Kansas, bean leaf beetle caused severe injury to beans in the northeastern areas, and spotted, local infestations of this pest occurred in various parts of Texas. Damage to garden beans in Nebraska was moderate to severe in the north central counties in June.

MEXICAN BEAN BEETLE (Epilachna varivestis) damaged beans in several areas during the year, appearing to be more abundant than usual in Delaware, Maryland and Utah and causing heavy damage in several other states.

In the Eastern States, moderate infestations of Mexican bean beetle caused light injury to beans in the Monmouth area of Maine during June and July; and the pest was a problem locally in gardens in Rhode Island, building up severely on beans at Smithfield on September 9. Adults and larvae were slightly more numerous than in 1958 in Delaware, with adults common to abundant during early June on beans in Kent and Sussex Counties and larvae being common by late June. Until mid-September, adults and larvae caused moderate injury to beans throughout Delaware, especially in Sussex County. In Maryland, the insect was heavier than usual on commercial and home plantings of beans, and the species caused varying degrees of damage to beans in Virginia. The first adults were seen in Granville County, North Carolina, on April 29, by which time they had already caused severe damage in Duplin County; and infestations of the pest in Georgia ranged from light to heavy on beans but not as damaging as in 1958. Infestations in Ohio were below normal.

Heavy Mexican bean beetle infestations caused damage to bean foliage in San Juan, Torrance and Bernalillo Counties, New Mexico; and the insect was a major pest of beans in Colorado during the year. Damage was above normal in a number of northern and central Utah counties but not as severe as in 1958 in Wyoming, causing an estimated 5 percent loss in 1959 in that State. The pest was found the week of July 3 in southeastern Wyoming (averaging 10 per 100 sweeps) and developed slowly, with counts averaging 2 adults and 29 larvae per 100 sweeps by July 31.

COWPEA CURCULIO (*Chalcodermus aeneus*) infestations in field peas were moderate to heavy in Georgia but more scattered than general. Adults of this species caused one to five spots per pod on untreated green beans in Wake County, North Carolina, by late June.

PEA WEEVIL (*Bruchus pisorum*) required control on canning peas in Utah and has been more abundant and more difficult to control in Washington since 1957 than the 10 preceding years. Mild winters and poor weather during control operations probably helped to cause this situation in Washington. Weevils actively entered fields on warm days June 11 and 12 in Whitman County, Washington, about 5,000 acres being border treated during June. Peas bloomed late in that county during 1959. Movement into hibernation started the first 2 weeks in September in Washington.

PEA LEAF WEEVIL (*Sitona lineata*) populations have been very low for the past 3 years on peas in northwestern Washington, corresponding to the use of weedicide on young plants. The pest first caused noticeable leaf injury to bush beans in the Willamette Valley of Oregon during 1959. Damage was not generally serious, however.

A NITIDULID (*Meligethes nigrescens*) emerged from overwintering quarters about April 3 in Oregon and built up slowly at first. By the end of July, numbers were far above normal, as high as 12 per blossom in many fields of bush beans in central Willamette Valley.

*Insects Attacking Beets*: BEET WEBWORM (*Loxostege sticticalis*) was a major pest of sugar beets in several of the Great Plains States during 1959. Controls were applied in North and South Dakota, Minnesota, Montana and Colorado. In North Dakota, the infestation was the heaviest experienced in many years in that State. Nearly all beet fields were treated at least once and some three times. The total sugar beet acreage treated was estimated at 72,000 acres in North Dakota. Controls were also applied to 10,000 acres of other crops. In Minnesota, populations of beet webworm were down from those of 1958 but still high enough to require control on most sugar beet acreages; and the heavy infestations of this pest in the western areas of South Dakota required considerable control. In Montana, the species was common in many Yellowstone Valley fields; and controls were applied while larval numbers were generally low in sugar beets throughout Idaho, with damage from feeding relatively minor. Spotted, abundant populations were recorded in Power County, Idaho, during July, however. The expected infestation did not develop in Wyoming, although several flights of moths were noted as well as larvae at scattered locations. A few fields were treated in Wyoming, but the pest was not generally a serious problem as it was in 1958 in that State. In Colorado, this species was a major pest of sugar beets, with three and a partial fourth generation appearing. This pest was also the major insect on lettuce in the San Luis Valley of Colorado during 1959; however, loss to that crop was due to disease rather than insects. The first adults of the season in Idaho were collected May 26 at Parma.

BEET LEAFHOPPER (Circulifer tenellus) appeared to be generally light during 1959, as was the incidence of curly top in beets. The late winter populations and host plant area were low in northern Mexico, southwest Arizona, southeast California, southern Nevada and southern Utah. A statement of outlook was issued in February, and substantiated in April, that the expected movement in late April and May would be approximately one two-hundredth as large as the severe 1958 movement. In Utah, the population on sugar beets averaged 0.2 per row by May 20. Damage to tomatoes, sugar beets, potatoes, beans, cucumbers for pickles, squash and other susceptible crops was light.

Infestations of beet leafhopper and incidence of curly top were relatively light in Texas, with some economic damage on the high plains; and they were the lowest in the last three years in Nevada. In New Mexico, beet leafhopper was present at 60 percent of the stops sampled during the March survey and averaged 11 per 40 square feet. The species was found to be more abundant east and north of Carlsbad, Eddy County, to Clovis, Curry County. Incidence of western yellow blight was much lower than in 1958 in New Mexico. The pest did infest sugar beets in Colorado but was not found in Wyoming during the year.

In Idaho, beet leafhopper populations were generally low in the southwestern counties during early June until the spring migration of adults began to concentrate in sugar beet fields. Adult populations then increased noticeably during July throughout the southern area but numbers appeared below those of previous years. The 1959 spring survey in Oregon was conducted from mid-March to May 6 in Morrow and Umatilla Counties. Observations indicated populations in the Hermiston area to be below normal. Natural host plants were found scarce due to dry conditions, which may have been a big factor in bringing about the low incidence of overwintering forms. The mean population on host plant-plots sampled in Oregon was 0.092 per square foot on the basis of 140 square foot samples. The mean population on sugar beets in that State during early May was 0.117 per linear foot on the basis of 90 linear foot samples. In Washington, an early spring survey of overwintered females gave a mean of 0.02 per square foot, less than one-tenth of the mean found in 1957 or 1958. Beet leafhopper was found at 5 Washington locations and overwintering host plants were scant and a predator (Geocoris pallens) was prevalent.

SUGAR-BEET ROOT APHID (Pemphigus betae) was numerous in some northern Utah beet fields, reducing the stand and yield in some instances; and scattered infestations in sugar beets ranging from light to heavy occurred in the northern Red River Valley of North Dakota during mid-September, with root injury severe in a few fields.

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) damaged sugar beets for the first time in two or three years in North Dakota in an early planted, treated field near Forest River, Walsh County. Advanced growth of the beets prevented serious yield reduction. Damage by this pest was also reported in the Yellowstone River drainage of Montana.

SPINACH LEAF MINER (Pegomya hyoscyami) adults were common to abundant in sugar beet fields in southern Idaho during early June, with oviposition noted about June 15 in the Idaho Falls area. Larval feeding injury was common in most fields sampled, but as usual, the plants generally outgrew the damage. In Ohio, oviposition by this species was heavy on sugar beets in the Milam area of Erie County. Early control measures were effective in preventing an important buildup. Moderate infestations of what was believed to be this species caused severe damage to beets in Cape Elizabeth, Maine, during June.

Insects Attacking Onions: ONION MAGGOT (Hylemya antiqua) destroyed untreated onion fields in Illinois but was very low in Indiana, a usual condition in that State. In Wisconsin, adults were numerous in Racine in late May, with eggs being found near volunteer onion plants. Damage occurred early in that State, severely injuring some untreated fields. A majority were in the pupal stage by June 10 in Wisconsin and adults were observed in mid-July. This species also damaged onions in Colorado during 1959, but disease caused more loss than insects to this crop.

In the Western States, onion maggot was generally light except in Nevada where populations and damage were above the 1957 and 1958 levels. In some Washoe County fields, damage was as high as 15 percent. In Oregon, larval activity started late, being noted during late May and early June in the eastern area, and being extremely light in both the eastern and Willamette Valley areas.

In Washington, spring-brood adults of onion maggot began emerging during the first week of April in the Walla Walla area. Adults were numerous in the Puyallup Valley of Washington during June, with heavy damage noted in the untreated and chlorinated hydrocarbon-treated fields. Adults were much less numerous than in 1957 or 1958 in Washington and no damage to mature onions was noted in the Walla Walla area by harvest, but severe damage to seedling bunching onions and light damage to winter onions was noted. No adults were recovered in insecticide-treated fields in the Columbia Basin where they were numerous in fields planted in onions in 1958. Populations throughout Washington were wiped out by a fungus disease (Entomophthora muscae).

In Idaho, onion maggot populations were very low in the Wilder-Parma area during late May. Onion losses attributable to larvae were estimated below one percent during May. The first-generation pupae were noted on May 25 and first-generation adults emerged by June 2. By late June, approximately 80 percent of the first generation had pupated and onion losses were estimated at below 5 percent in Idaho due to larval attack. Second-generation larvae began appearing in early July but feeding damage was minor. A major factor contributing to the decline of this pest in southwestern Idaho was an abundance of a fungus disease (Entomophthora muscae) which killed large numbers of adults in the field.

ONION THRIPS (Thrips tabaci) damage to onions was reported as being light in Ohio; light to heavy in Winter Garden area of Texas; average in Utah; light to moderate in Lyon and Washoe Counties, Nevada; and requiring control in early July in many onion fields in southeastern Idaho. Infestations also damaged onions in Colorado and a thrips, probably this species, was present in all onion-growing areas of Arizona, averaging 1 to 5 per plant, from mid-February until harvest.

A LESSER BULB FLY (Eumerus strigatus) damaged onions in Colorado; and CLOVER MITE (Bryobia praetiosa) was abundant on the edge of an onion field in Sussex County, Delaware, in mid-May.

Insects Attacking Asparagus: ASPARAGUS BEETLE (Criocerus asparagi) numbers were heavier than usual on commercial and home asparagus plantings in Maryland and were more damaging than usual in 1958 in New Jersey, but not as heavy as in previous years in the latter State. Damage was light to asparagus in the Orono area of Maine during June and similar conditions were present in the Norridgewock area of that State in July. In Delaware, adults were found in late April on young asparagus spears and caused heavy feeding injury. The first larvae were found in mid-May and by mid-June adults were very abundant and caused moderate feeding injury to the ferns in that State. Adults and larvae remained common to abundant in Delaware on asparagus ferns through mid-October in all counties.

Asparagus beetle damage to asparagus in Utah was below normal in the northern and some central counties. Egg deposition was noted in Canyon County, Idaho, during late May and in the northern area of the State in early June. Adult numbers were about equal to those of recent years, with the exception of the American Falls area where adults became extremely numerous in home gardens during August.

SPOTTED ASPARAGUS BEETLE (Criocerus duodecimpunctata) adults were heavy on asparagus in East Greenwich, Rhode Island, in mid-May; and the pest was more damaging than in 1958 in New Jersey, but populations were not as heavy as in previous years in that State. In Delaware, adults were generally common on asparagus. Damage in Utah was below normal in the northern area and in some southern counties; and moderate defoliation of asparagus was noted in home gardens in Latah County, Idaho, during early July. Adults of this pest also became abundant on asparagus in home gardens in American Falls, Idaho, during August.

ASPARAGUS MINER (Melanagromyza simplex) larvae were common in asparagus from mid-May to early June in Delaware, causing noticeable feeding injury but never in serious proportions.

Insects Attacking Lettuce: BEET ARMYWORM (Spodoptera exigua)* was consistently present in lettuce during the fall in Arizona and required control from September through the November harvest. Counts in untreated fields in Yuma County averaged about 2 larvae per plant in mid to late October. Counts in the central and southeastern areas were generally lower.

An APHID (Nasonovia ribis-nigri) was reported very abundant on lettuce in the Missoula, Montana, area during September and October. This is the first report of the species in the State.

Insects Attacking Sweetpotatoes: SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) infestations are known to occur in Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina and Texas. New infestations were down 71 percent from 1958 and active infestations were 60 percent less than in 1958 within the control or eradication areas of the infested states. Only Texas and southern Florida are not in the control or eradication work area. Within Texas, spotted, local infestations were reported in various areas during 1959. Inspections in Oklahoma during the year were negative. The actively infested properties within the control or eradication area as of December 31, 1959, were as follows: Alabama - 97; Florida - 468; Georgia - 72; Louisiana - 601; Mississippi - 160; South Carolina - 11.

A WEEVIL (Rhyssomatus palmicollis) was found infesting a limited number of sweetpotatoes in some fields in the east central and southeastern areas of Oklahoma during October and in one county in Arkansas, the first record of this species in Arkansas since 1926. One-third of the sweetpotatoes on one farm were damaged by both adults and larvae in Arkansas.

Limited surveys were conducted for SWEETPOTATO WHITEFLY (Bemisia tabaci) during 1959 in Alabama, Florida, Mississippi, North Carolina, Oklahoma, South Carolina and Texas. Specimens from Texas and Florida were identified as this species. All specimens submitted from the other states surveyed were negative.

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) severely damaged sweetpotatoes near Arnaudville, Louisiana.

---

*Zimmerman, E. C., 1958, Insects of Hawaii, Vol. 7:339

*Insects Attacking Carrots*: CARROT RUST FLY (*Psila rosae*) control in Washington was obtained during 1959 with one of the newer phosphate insecticides; resistance to some other materials was first noted in 1958 and now involves 500 acres in the Sammamish Valley. CELERYWORM (*Papilio polyxenes asterius*) remained a minor pest of carrots in Delaware, causing very light injury in New Castle County. TULIP BULB APHID (*Anuraphis tulipae*) was present in carrots throughout the early spring in Arizona and became very heavy during April in the central area of the State.

*Insects Attacking Mint*: Populations of a MINT LOOPER (*Rachiplusia ou*) were quite low during the summer in Indiana, with a few fields being damaged somewhat in mid-July, about a month later than normal.

*Insects Attacking Hops*: HOP APHID (*Phorodon humuli*) appeared 3 weeks earlier than in 1958 in Oregon and was well distributed in Marion County hop yards. OMNIVOROUS LEAF TIER (*Cnephasia longana*) was found in hops in Marion County, Oregon, in May.

*Insects Attacking Small Berry Truck Crops*: ROSE STEM GIRDLER (*Agrilus rubicola*) damaged a number of raspberry patches in Utah, Box Elder, Salt Lake and Davis Counties, Utah; and RED-NECKED CANE BORER (*A. ruficollis*) attacked raspberry in Wake County, North Carolina, with Latham variety being the most susceptible variety.

RASPBERRY ROOT BORER (*Bembecia marginata*) injured raspberry plants in the Boonsboro area of Washington County, Maryland, during June; and the pest damaged a number of raspberry patches in Utah, Box Elder, Salt Lake and Davis Counties, Utah. In Oregon, the species was present in normal numbers, with 14 percent of the eggs hatching by October 25 and 46 percent by November 8 in Marion County.

STRAWBERRY CROWN MOTH (*Ramosia bibionipennis*) larvae killed some new raspberry plants in Utah and also damaged a large number of red currant canes at Huntington, Emery County; and the pest infested many dewberry and raspberry canes at Providence, Cache County, Utah. The species was not abundant this year in Oregon and was of no particular problem.

STRAWBERRY LEAF ROLLER (*Ancylis comptana fragariae*) was quite a problem in strawberries in the southeastern area and on the Eastern Shore of Virginia during 1959; and the pest caused damage where control measures were not applied in Kansas. The species was common in eastern Montana, and this pest was one of several species that caused above normal injury in north central Utah communities. In Idaho, populations averaged near normal in strawberry plantings throughout the State during the year, except in the Grace area where many plants were severely damaged during late June; and strawberry leaf roller was severe in small plantings in Whitman County, Washington. Pupation occurred the last week of June and adults emerged the second week in July in Washington. OBLIQUE-BANDED LEAF ROLLER (*Archips rosaceana*) was not a general problem in Oregon, having been present in noticeable numbers in only one or two untreated raspberry fields.

STRAWBERRY WEEVIL (*Anthonomus signatus*) was a problem on strawberries in several states. Damage was normal in New Jersey, but the species was above normal in abundance on the Eastern Shore of Maryland and was a problem in the southeastern and Eastern Shore areas of Virginia. The pest was also a problem in old strawberry plantings in Minnesota. Large numbers of ALFALFA WEEVIL (*Hypera postica*) adults were observed feeding on strawberry fruit in Orange County, North Carolina, during early May.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) populations have been very low in Washington since soil treatments were started commercially in 1953 and the species was not a pest during 1959 in Oregon, being adequately controlled by growers using the approved methods. Damage to strawberries in Idaho was near normal in 1959 except at Middleton where heavy infestations caused considerable damage to a small patch late in May. BLACK VINE WEEVIL (B. sulcatus) was of no importance in Oregon and populations have been very low in Washington since soil treatments were started commercially in 1953. In Utah, a strawberry weevil (B. rugosostriatus), and sometimes black vine weevil, frequently damaged untreated strawberry patches in the central and northern areas of the State, with local injury to roots of raspberry, some other fruits and occasionally roses. Black vine weevil killed out many stone fruit trees in an experimental greenhouse at Logan, Cache County, Utah. Another WEEVIL (Nemocestes incomptus) is getting worse in northwestern Washington on strawberry, with the first serious infestation being reported in Skagit County. Soil fumigants gave control, however. A ROOT WEEVIL (Sciopithes obscurus) was also found injuring a strawberry field in Columbia County, Oregon, in June.

Larvae of a BEETLE (Colaspis sp.) were reported killing strawberries in a field in Wake County, North Carolina, in late July. A SAP BEETLE (Lobiopa insularis) started moving into strawberry fields from hibernation areas in mid-March in Louisiana and by the end of April large populations were present in some fields in Tangipahoa Parish.

ROSE LEAFHOPPER (Edwardsiana rosae) was about normal on blackberries in Washington, but MEADOW SPITTLEBUG (Philaenus leucophthalmus) populations were the highest for the past four years in Door County, Wisconsin, strawberries. An unusual outbreak of WHITEFLIES was reported on strawberries in Connecticut during the year. NEGRO BUGS were abundant in strawberry fields in Tangipahoa Parish, Louisiana.

Several APHIDS were reported on strawberries or raspberries during the year. Amphorophora sensoriata infested raspberry plantings in Allegany County, Maryland, in early July. Myzus ascalonicus was not a problem in western Oregon in 1959 but scattered light populations of this species were recorded in Skagit, Snohomish and Whatcom Counties, Washington, during mid-May. M. ascalonicus was first noted on strawberries April 23 in Washington. STRAWBERRY ROOT APHID (Aphis forbesi) was found on strawberries in mid-May in Delaware, and STRAWBERRY APHID (Pentatrichopus fragaefolii) was present in unusually large numbers in the Willamette Valley of Oregon. The peak abundance of this species was observed from May 25 to June 15 in Oregon, with no winged forms noted after about July 15. FOXGLOVE APHID (M. solani) was also locally abundant on strawberries in the northern area of Oregon in mid-April.

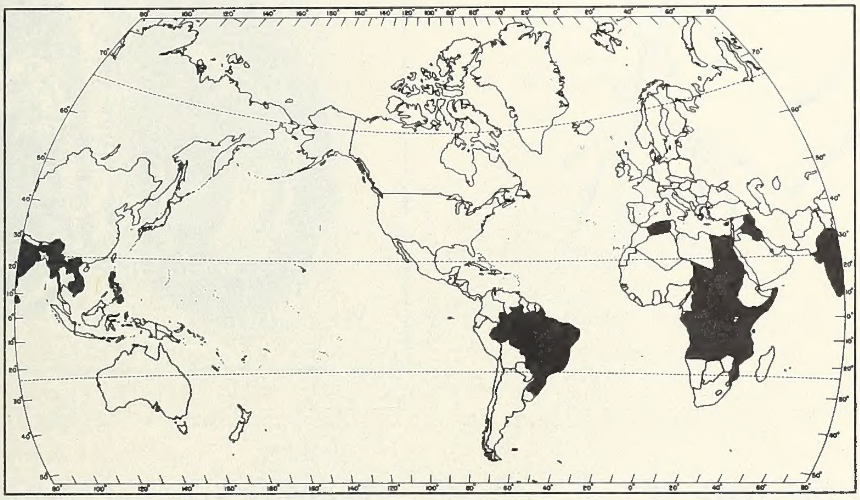
CYCLAMEN MITE (Steneotarsonemus pallidus) was generally light to moderate on strawberries throughout Maine in June, with light to moderate damage. Good control was obtained in cases where insecticides were applied in the fall of 1958. A moderate to outbreak level was also reported in all areas of Twin County, Maine, in July, with moderate damage. In Wisconsin, mites and their damage were present on a large percentage of the strawberry acreage. This species was troublesome in Washington but effective controls kept damage low. The buildup began in mid-August in untreated strawberry fields in Marion and Yamhill Counties, Oregon, but although 7 new infestations were found, the buildup was considered much less than in 1958 by the end of September. A spider mite, probably STRAWBERRY SPIDER MITE (Tetranychus atlanticus), was quite a problem in strawberries in southeastern and Eastern Shore areas of Virginia during the year.

## INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

## COTTONSEED BUG (Oxycarenus hyalinipennis Costa)

Economic Importance: This lygaeid attacks the seed of cotton in the field as the bolls open. Weight loss in cottonseed in Egypt has been estimated at 2.5 to 15 percent, annually. Severe infestations in that country may cause loss of vitality in as much as 3/4 of the seed. Staining of the lint also occurs. Populations build up to high levels in Egypt and the Sudan. Several other African countries report the insect as being of some economic importance. In Brazil, observations indicate the insect is generally a minor pest of cotton, but it can become a nuisance problem in stored unginned cotton. O. hyalinipennis has been occasionally intercepted at U. S. ports of entry.

Distribution: Africa (Tanganyika, Sudan, Algeria, Angola, Belgian Congo, Egypt, French Equatorial Africa, Somaliland, Kenya, Nyasaland, Mozambique, Northern Rhodesia, Uganda), Cyprus, Brazil, Burma, Ceylon, India, Indochina, Iraq, Philippines.



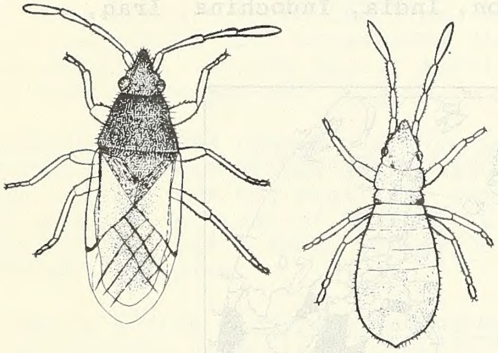
General Distribution of Oxycarenus hyalinipennis

Hosts: Cotton, abutilon, kenaf, okra, hollyhock, hibiscus and other Malvaceae. Also recorded on Brachychiton populneus.

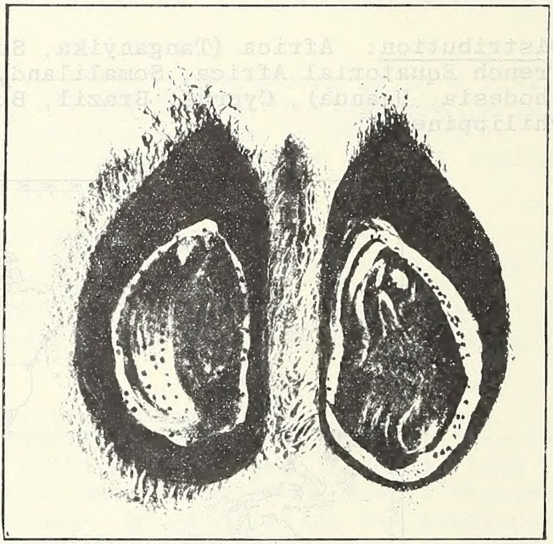
Life History and Habits: In Egypt copulation and oviposition commence when the first cotton bolls open. Eggs are laid usually in the lint, sometimes on green bolls. Each female lays about 20 eggs. Hatching occurs in about 4 days. All stages feed on the seed. The life cycle may be complete in 20 days. There are 3 to 4 generations annually. The insect hibernates in the adult stage in grass and weed or other such shelter. Although the overwintered adults appear in young cotton, breeding does not take place until the bolls are ripe. In heavy infestations, populations build up to enormous numbers. As many as 749 adults and nymphs have been recorded in a single boll.

(Lygaeidae, Hemiptera)

Description: Newly emerged ADULT pale pink but rapidly turns black. Length of male about 3.8 mm., female 4.3 mm. Male abdomen terminates in round lobe, while that of female is truncate. The insects have three tarsal joints and a pair of ocelli. Hemelytra are hyaline, clavus and base of cuneus and embolium denser than rest. Setae of 3 different types; more or less erect, stiff hairs, blunt at tip terminating in 4 to 7 small teeth; normal straight tapering hairs; and very thin curved flat-lying tapering hairs. Head and thorax of NYMPHS brownish-olivaceous, abdomen pinkish. Fourth instar darker brown on head and thorax, wing-buds distinct, overlapping sides of white metathorax. EGG oval 0.95 x 0.28 mm., striated, pale yellow becoming pink. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(11):3-11-60.



Adult and Nymph of
Oxycarenus hyalinipennis



Severely Attacked Cotton Seed

---

Major reference and figures (except map): Kirkpatrick, T. W. 1923. Minist. Agr., Egypt. Tech. and Sci. Serv. Bul. 35, 107 pp.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

Official Business

POSTAGE AND FEES PAI
U. S. DEPARTMENT OF AGRICULTUR